Amendments to the Specification

In the specification, please replace paragraph 0003 with the following paragraph:

[0003] Unfortunately, differential thermal expansion during operating conditions between the shell and the rotor results in variations in the tip clearances. In addition various operating conditions affect tip clearances --for example, tip clearances in gas turbine compressors often reach their minimum values during shutdown, whereas the tip clearances in low pressure steam turbines often reach their minimum values at steady state full load operation. Consequently, if insufficient tip clearance is provided at assembly, impact between the stator blade tips and rotor seals and impact between the seals on the shell and the rotating blade tips may occur when certain operating conditions are reached. These impacts are commonly known as "rubs." Also turbomachines are subjected to a variety of forces under various operating conditions, particularly during transient conditions, such as start-ups, shutdowns, and load changes. These forces may also cause rubs. Rubs often cause severe damage to the blades and seals of the turbomachine. However, in turbomachines with drum rotor type construction, space is limited and a large number of seals prevent the movement of individual seals to control the seal clearances. Accordingly, a method and apparatus for actively controlling the clearances in a turbomachine with a drum rotor type construction in order to prevent rubs is desired.

In the specification, please replace paragraph 0026 with the following paragraph:

[0026] Therefore, an embodiment of the disclosed apparatus uses displacement apparatuses to move circumferential segments of the stator carriers radially away from each other, thereby providing an active clearance control between the seals and the sealing surfaces. The displacement apparatuses may be ~~a~~ springs, bellows, inflatable tubes, rods, cams, hydraulic cylinders, piezoelectric devices, wires, cables, bi-metallic materials, phase changing materials, solenoids, pneumatic bellows actuators or combinations thereof.

In the specification, please replace paragraph 0033 with the following paragraph:

[0033] Figure 7 shows a perspective view of a portion of a shell 10 assembly. In this view, the assembly has been opened at the horizontal splitline with the top half of the shell 10 moved to the right of the bottom half. In this embodiment, four stator carriers 12 are shown installed in the shell 12. ~~For clarity, only one stator is shown with stator blades 16 installed.~~ In this embodiment each stator carrier has 3 pair of displacement apparatuses 34. However, other embodiments of the disclosed apparatus may have 1, 2, 4 or more pairs of displacement apparatuses per stator carrier. Prior to a transient condition, between one and all of the twenty-four displacement apparatuses would activate, separating the first segments from the second segments, thereby providing an increase in clearances between the seals and the sealing surfaces.

In the specification, please replace paragraph 0034 with the following paragraph:

[0034] A person skilled in the art will recognize that in embodiments of the disclosed apparatus, that the stator carrier 12 may be simply an inner shell adjustably housed within the shell 10. The stator carrier 12 may be split along a splitline that is coincident with the horizontal splitline of the steam turbine. Further, a radial displacement apparatus 34 may be housed at the splitline of the stator carrier 12 such that the displacement apparatus 34, when non-activated, is completely within either segments 30 or segment 32. For instance, if the displacement apparatus is completely housed within segment 30, then when activated, the displacement apparatus 34 will push against a surface of segment 32, thereby radially pushing apart segments 30 and 32. Those skilled in the art will recognize that the displacement apparatus 34 may be configured to communicate with the segments 30,32 in a variety of ways to radially separate segments 30, 32. The surface of the stator carrier that the displacement apparatus communicates with in order to move the segments 30,32 apart may be machine~~d~~ finished, may have a rough finish, or no finish.

In the specification, please replace paragraph 0035 with the following paragraph:

[0035] Figure 8 is a perspective view of one embodiment of the disclosed apparatus. This embodiment may comprise two actuator carriers 72 housed within a first segment 30 and second segment 32. A trench 73 is machined into the first and second segments 30 and 32 to house the actuator carriers 72. The visible trenches 73 are shown with the actuator carriers 72 removed from ~~the~~ it. The actuator carriers 72 may simply sit in the trenches without being fixed to the trenches. However, in other embodiments the actuator carriers 72 may be fixed via welding or fastening (e.g. bolts) in the trenches. Welded into each of the actuator carriers are several pneumatic bellows actuators 74. Figure 9 shows a partial close up view of the actuator carrier 72 in the first segment 30. The actuator carrier is shown with two pneumatic bellows actuators 74 located thereon. An actuator piston 76 is shown extending from the actuator carrier. When the actuator 74 is not activated, the piston is flush against the actuator carrier 72. The piston 76 is what actually pushes against the opposing second segment 32 in order to provide more clearance to the blade tips. Figure 10 shows a cutaway partial view of the actuator carrier 72 from Figure 9. The piston 76 is shown again extending from the actuator carrier 72. However, in this view the bellows 78 of the pneumatic bellows actuator 74 can be seen. A metallic tube 80 is shown in communication with the interior of the actuator carrier 72 via an opening 82. The tube 80 is housed in a channel (not shown) which is drilled into the shell 10 and into the first segment 30. This channel allows the tube 80 to extend from an outer shell of a steam turbine through the shell 10, and through the first segment 30 where it can supply high pressure fluid to the interior of actuator carrier 72. The tube 80 is coupled to the interior surface of an outer shell of the steam turbine. The tube 80 is in communication with a connector on the outer surface of the outer shell of the steam turbine. This connector is in communication with a high pressure fluid supply. Thus to activate the actuators 74, the high pressure fluid supply is turned on, whereupon high pressure fluid travels through the connector into the metallic tube 80 and to the interior of the actuator carrier 72 through the opening 82. In this embodiment, the actuator carriers, and the actuators are composed of ~~an~~ nickel-base alloy with chromium and iron, such as inconel, which provides for predictable thermal growth characteristics.

In the specification, please replace paragraph 0036 with the following paragraph:

[0036] Figure 11 shows a cutaway perspective view of another embodiment of the disclosed apparatus. A first stator carrier segment 30 is shown adjustably housed within a shell 10. The stator carrier is moveable radially and axially in this embodiment. Axial movement is accomplished by activation of one or more axial displacement apparatuses 46, only one of which is shown in this view. When one or more of the axial displacement apparatuses 46 are activated, the first stator carrier segment 12 and the stator blades 16 move in the direction of the arrow relative to the shell 10. The axial movement of the stator carrier 12 helps lower the force requirements for the radial displacement apparatuses to move the stator carrier segments radially. In this embodiment, the axial displacement apparatuses would axially move the 2nd stator carrier segment 32. However there may be occasions where other embodiments are desirable which move either only one or less than all the stator carrier segments axially. Pressure forces acting on the stator blades are very large. These pressure forces act to push the first and second segments 30, 32 together, thereby requiring greater force from the radial displacement apparatuses 34 to push apart the upper and second segments 30, 32. By employing the axial displacement apparatuses described in these embodiments of the disclosed apparatus, the axial position of the stator carrier segments are shifted, thus moving the static seal face location to a location farther upstream, greatly reducing the net pressure force tending to close the seal clearances, making it possible to open seal clearances with significantly less force. This embodiment of the disclosed apparatus ~~maybe~~ may be configured for use in a stator carrier that has been split into four segments (Figure 6). Also note that the dovetail 48 allows for radial movement of the stator carrier 12, but limits the centripetal movement, thereby stopping the blades 16 from impinging the rotor due to clearance between the stator carrier segments 30,32 and the shell 10.